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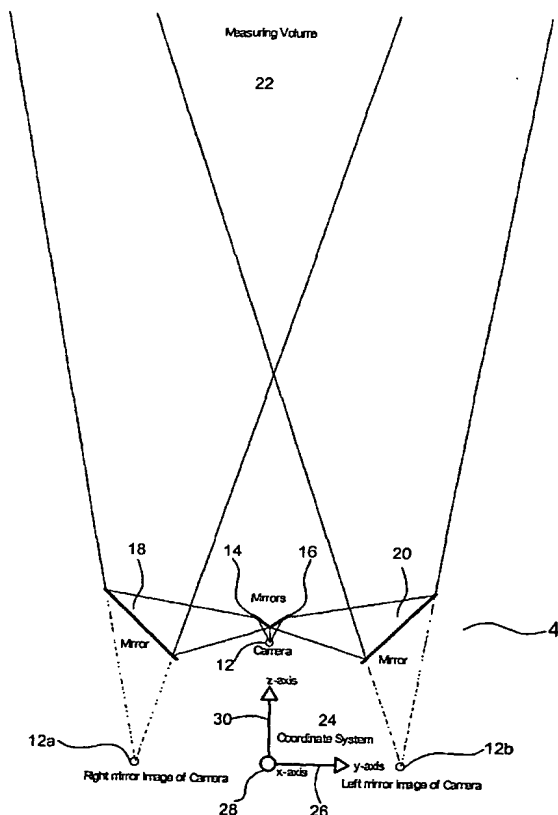
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(54) Title: A MAN-MACHINE INTERFACE BASED ON 3-D POSITIONS OF THE HUMAN BODY



(57) Abstract: The invention relates to a man-machine interface wherein three-dimensional positions of parts of the body of a user is detected and used as an input to a computer. An electronic system is provided for determining three-dimensional positions within a measuring volume, comprising at least one electronic camera for recording of at least two images with different viewing angles of the measuring volume, and an electronic processor that is adapted for real-time processing of the at least two images for determination of three-dimensional positions in the measuring volume of selected objects in the images.

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B. FIELDS SEARCHED

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99/40562 A (AZARIA HAIM ;LEV JOSEPH (IL)) 12 August 1999 (1999-08-12) page 9, line 27 - page 16, line 33 figures 1,2	1-6, 9-12, 19, 22, 24, 26, 31-33
Y		
A		7, 8, 13-18, 21, 30 23, 27-29
X	EP 1 248 227 A (MATSUSHITA COMM IND UK LTD) 9 October 2002 (2002-10-09) paragraphs '0013! - '0016! paragraphs '0041! - '0062! figures 1, 11, 12	1-6, 9-11, 19, 20, 22
A		23
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/020933 A1 (MAGGIONI CHRISTOPH) 13 September 2001 (2001-09-13) paragraphs '0047! - '0050! figures 1-4	1-6, 19, 22
A	-----	23
Y	US 2002/183961 A1 (FRENCH BARRY J ET AL) 5 December 2002 (2002-12-05) paragraphs '0072! - '0086! paragraphs '0114! - '0130! paragraphs '0349! - '0372! figures 1-5	7, 8, 13-18, 30
A	-----	32
Y	US 5 285 314 A (FUTHEY JOHN A) 8 February 1994 (1994-02-08) column 1, lines 8-37	21
A	-----	
A	US 4 956 794 A (HILSEN RATH OLIVER ET AL) 11 September 1990 (1990-09-11) column 2, line 63 - column 4, line 7 figures 1-3	7, 8
A	-----	
A	EP 0 913 790 A (TAKENAKA CORP) 6 May 1999 (1999-05-06) paragraphs '0034! - '0050! figures 1-5C	1, 24, 26-29
A	-----	
A	US 2002/146672 A1 (BOIAN RARES ET AL) 10 October 2002 (2002-10-10) paragraphs '0042! - '0071! figures 1-8	13-18
A	-----	
A	WO 03/029860 A (MEGASENSE INC) 10 April 2003 (2003-04-10) page 6, lines 7-10	21
P, A	-----	
P, A	DE 102 26 754 A1 (ABRAHAM, GEZA) 8 January 2004 (2004-01-08) pages 12-20 figures 1, 2	30
A	-----	
A	US 5 065 750 A (MAXWELL ET AL) 19 November 1991 (1991-11-19) column 3, line 4 - column 4, line 59 figures 1, 2	30

INTERNATIONAL SEARCH REPORT

Information on patent family members

In International Application No
PCT/DK2004/000298

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9940562	A	12-08-1999	AU 2439399 A WO 9940562 A1	23-08-1999 12-08-1999
EP 1248227	A	09-10-2002	GB 2374266 A EP 1248227 A2 US 2002171633 A1	09-10-2002 09-10-2002 21-11-2002
US 2001020933	A1	13-09-2001	DE 10007891 A1 DE 20022556 U1 EP 1128317 A2	06-09-2001 07-02-2002 29-08-2001
US 2002183961	A1	05-12-2002	US 6430997 B1 US 6308565 B1 US 6098458 A US 6073489 A US 2004248632 A1 EP 1059970 A2 JP 2002516121 T WO 9944698 A2 AU 1157197 A WO 9717598 A1	13-08-2002 30-10-2001 08-08-2000 13-06-2000 09-12-2004 20-12-2000 04-06-2002 10-09-1999 29-05-1997 15-05-1997
US 5285314	A	08-02-1994	DE 4213910 A1 GB 2256500 A JP 7218709 A	05-11-1992 09-12-1992 18-08-1995
US 4956794	A	11-09-1990	IL 77610 A	25-01-1994
EP 0913790	A	06-05-1999	JP 11134089 A DE 69817498 D1 DE 69817498 T2 EP 0913790 A1 US 6434255 B1	21-05-1999 02-10-2003 17-06-2004 06-05-1999 13-08-2002
US 2002146672	A1	10-10-2002	NONE	
WO 03029860	A	10-04-2003	US 2003090776 A1 WO 03029860 A1	15-05-2003 10-04-2003
DE 10226754	A1	08-01-2004	NONE	
US 5065750	A	19-11-1991	NONE	